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| **Unit: Atomic Structure** | | | |
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| |  |  | | --- | --- | | **IB Expectations/ Assessment Criteria** |  |   **DP Group 4:Chemistry, DP - Age 16-18, Objectives**  It is the intention of all the Diploma Programme experimental science courses that students achieve the following objectives.   * 1. Demonstrate an understanding of: a. scientific facts and concepts b. scientific methods and techniques c. scientific terminology d. methods of presenting scientific information. * 2. Apply and use: a. scientific facts and concepts b. scientific methods and techniques c. scientific terminology to communicate effectively d. appropriate methods to present scientific information. * 3. Construct, analyse and evaluate: a. hypotheses, research questions and predictions b. scientific methods and techniques c. scientific explanations. * 4. Demonstrate the personal skills of cooperation, perseverance and responsibility appropriate for effective scientific investigation and problem solving. * 5. Demonstrate the manipulative skills necessary to carry out scientific investigations with precision and safety. | | | |
| |  |  | | --- | --- | | **Approach** |  | | | |  |  | | --- | --- | | **Significant concept(s) / Considerations** |  |   Atoms are the building blocks of all matter. | |
| |  |  | | --- | --- | | **Guiding Questions** |  |   Is our study of atoms complete? | | |  |  | | --- | --- | | **Learner Profile** |  |  |  |  | | --- | --- | | * Inquirers * Communicators * Open-minded |  | | |
| |  |  | | --- | --- | | **Central Idea / Content** |  |   Structure of atom. | | |  |  | | --- | --- | | **Learning Objectives** |  |   Position of protons, neutrons and electrons in the atom.  Relative masses and relative charges of protons, neutrons and electrons.  Define mass number (A), atomic number (Z) and isotopes of an element.  Symbol for an isotope given its mass number and atomic number (example 126C).  Calculate the number of protons, neutrons, and electrons in atoms and ions from the mass number, atomic number and charge.  Compare the properties of the isotopes of an element.  Discuss the uses of radioisotopes.  Describe and explain the operation of a mass spectrometer – vaporization, ionization, acceleration, deflection and detection.  How the mass spectrometer can be used to determine relative atomic mass using the 12C scale.  Calculate the non integer relative atomic masses and abundance of isotopes from given data.    Describe the electromagnetic spectrum.  Distinguish between a continuous spectrum and a line spectrum.  How the lines in the emission spectrum of hydrogen are related to electron energy levels.  Deduce the electron arrangement for atoms and ions upto Z = 20. | |
| |  |  | | --- | --- | | [**Assessment**](http://kis-in.rubiconatlas.org/c/pi/v.php/Atlas/Browse/StandardsDetail/View/Default?CurriculumMapID=382&UnitID=14350&YearID=2012&) |  |   **A unit Test**  **Summative: Standardized Test**  A unit test done. | | | |
| |  |  | | --- | --- | | **Information Literacy & ICT** |  |   Research using internet. | |  |  | | --- | --- | | **International Mindedness** |  |   Appreciate the contribution of chemists from around the world in trying to understand the structure of an atom. | | |  |  | | --- | --- | | **TOK** |  |   What is the significance of the model of the atom in the different areas of knowledge? |
| |  |  | | --- | --- | | **Strategies / Activities / Differentiation** |  |   Extra support lessons for students with learning difficulties. | | |  |  | | --- | --- | | **Resources** |  |   Chemistry Course Companion  Teacher assisted learning materials  Independent research instruments  Worksheets | |
| |  |  | | --- | --- | | **Unit Reflections** |  |   Taken by Mr. Joshi. Some topic like spectrometer and spectrum had to be retaught. The students are now better. | | | |